

Curriculum Vitae

Monique Weemstra

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Employment

- 2020 (present) Postdoctoral researcher, Department of Ecology and Evolutionary biology, University of Michigan; Ann Arbor, MI, USA. Advisors: Dr M. Natalia Umaña, Dr Jenny Zambrano.
In this postdoc position, I examine interspecific variation in leaf and root functional traits of mature (temperate) forest trees and link this variation to their growth and survival.
- 2018 –2019 Postdoctoral researcher, Center for Functional Ecology and Evolution; Montpellier, France. Advisors: Dr. Catherine Roumet, Dr. Grégoire Freschet.
In the French/Mexican ECOPICS project, I studied co-variation in root and leaf functional traits along an altitudinal gradient at the plant community and species level in a temperate and tropical (sub)alpine system.
- 2017 – 2018 Postdoctoral researcher, School of Biological Sciences, University of Nebraska – Lincoln; Lincoln (NE) USA. Advisor: Dr. Sabrina Russo.
At the Center for Root & Rhizobiome Innovation, I designed and built self-regulating plant growth chambers to conduct a stable isotope (¹³C) experiment and study plant-microbe interactions. I led a greenhouse experiment to compare plant growth, root traits and soil microbes across prairie grasses.
- 2012 Trainee, Forest Ecology and Forest Management group, Wageningen University; Wageningen, The Netherlands
During this traineeship, I wrote my Ph.D. proposal (granted), published my MSc thesis, and wrote a literature review on biomass harvesting effects on forest nutrition

Education

- 2012 – 2017 Ph.D. project: “Beyond leaf economics. Integrating root, leaf and stem traits to examine tree resource acquisition and growth”. Supervisors: Prof. dr. GJM Mohren, Dr. FJ Sterck, Prof. Dr. L Mommer, Wageningen University, The Netherlands.
I linked inter- and intraspecific variation in root functional traits and tree growth by combining root trait and tree growth data collected in forests, root trait relationships and tradeoffs derived from a literature review, and a new tree growth model in which these data, relationships and concepts were implemented.

- 2009 – 2012 MSc Forest and Nature Conservation, Wageningen University, Wageningen.
I wrote a model (R Statistical Software) that calculates the light compensation point for different tropical shrub species based on their variation in leaf traits, plant size, and crown architecture.
- 2001 – 2006 MA Development Studies, Radboud University, Nijmegen.
I studied the arts and crafts sector in indigenous Australian communities

Publications

Published in peer-reviewed journals:

- Weemstra M**, Kiorapostolou N, van Ruijven J, Mommer L, de Vries J, Sterck F. (2020). The role of fine-root mass, specific root length and life span in tree performance: A whole-tree exploration. *Functional Ecology*, doi: <https://doi.org/10.1111/1365-2435.13520>
- Weemstra M**, Sterck F, Kuyper T, Mohren F, Visser E, Mommer L. (2017). Root trait plasticity of beech (*Fagus sylvatica*) and spruce (*Picea abies*) trees on contrasting soils. *Plant and Soil*, 415: 175-188.
- Weemstra M**, Mommer L, Visser E, van Ruijven J, Kuyper T, Mohren F, Sterck F. Towards a multidimensional root trait framework: a tree root review. (2016). *Tansley review*. *New Phytologist*, 211: 1159-1169.
- Zhang, L, Copini, P, **Weemstra M**, Sterck F. (2015). Functional ratios among leaf, xylem and phloem areas in branches change with shade tolerance, but not with local light conditions, across temperate tree species. *New Phytologist*, 209: 1566-1575.
- Weemstra M**, Eilmann B, Sass-Klaassen U, Sterck FJ. (2013). Summer droughts limit tree growth across 10 temperate species on a productive forest site. *Forest Ecology and Management*, 306: 142–149.
- Sterck FJ, Duursma R, Pearcy R, Valladares F, Cieslak M, **Weemstra M**. (2013). Plasticity influencing the light compensation point offsets the specialization for light niches across shrub species in a tropical forest understory. *Journal of Ecology*, 101: 971-980.
- Mommer L, **Weemstra M**. (2012). The role of roots in the resource economics spectrum. *New Phytologist*, 195(4): 725-727.
- Cornelissen JHC, Sass-Klaassen U, Poorter L, ..., **Weemstra M**, ... (2012). Controls on coarse wood decay in temperate tree species: Birth of the LOGLIFE Experiment. *AMBIO. A Journal of the Human Environment*, 41 Suppl 3: 231–45.

First-authored manuscripts in review/preparation:

- Weemstra M**, Freschet GT, Stokes A, Roumet C. In review, *Journal of Ecology*. Intraspecific root trait responses to elevation: When roots are stuck between a rock and a hard place.
- Weemstra M**, Peay K, Davies SJ, Mohammad M, Tan S, Russo SE. In preparation. Edaphic drivers of the mycorrhizal-associated nutrient economy in a Bornean mixed dipterocarp rain forest.
- Weemstra M**, Roumet C, Anthelme F, Cruz-Maldonado N, Stokes A, Freschet GT. In preparation. Root and leaf trait co-variation along an elevation gradient.

Non-peer-reviewed:

Weemstra M. 2017: Belowground Uptake Strategies. How fine-root traits determine tree growth. Ph.D. Dissertation, Wageningen University, Wageningen. Doi: 0.18174/400247; digital version (PDF) via [ResearchGate](#)

Weemstra M, Mommer L, Goudzwaard L, Mohren F, Sterck F. (2019) Boomwortels: De verschillende ondergrondse strategieën van bomen. Vakblad Natuur Bos Landschap. Mei 2019: 3-7. (*Thesis summary in professional journal for foresters and nature managers*)

Weemstra M, den Ouden, J. (2012) A pre-search into the impact of removing logging residues on nutrient balances in Dutch forests. Forest Ecology and Forest Management group, Wageningen University (internal report).

MSc theses:

- 2012 **Weemstra M.** (2012). 'Growth patterns, and climate- and groundwater responses of 10 temperate, deciduous tree species'. Supervisors: Dr. B Eilmann, Dr. U Sass-Klaassen, Dr. FJ Sterck; Wageningen University.
- 2011 **Weemstra M.** (2011). 'Toward understanding intraspecific differences in whole-plant shade tolerance. A modelling approach for 15 *Psychotria* species using Yplant'. Supervisors: Dr. FJ Sterck, Wageningen University; Dr. RA Duursma, University of Western Sydney, Australia.
- 2006 **Weemstra M.** (2006). 'Businesses Out Bush. Aboriginal Art in the Hybrid Economy'. Supervisor: Em. Prof. Dr. A Borsboom, Radboud University, Nijmegen, the Netherlands.

Grants & Awards

- 2014 Short-term Scientific Mission to Mycorrhiza group, Swiss Federal Research Institute WSL, Switzerland; funded by COST Action FP1106, STReESS: € 2,500
- 2012 Personal Ph.D. grant, funded by the Netherlands Organisation of Scientific Research (NWO) and the Graduate School Production Ecology and Resource Conservation (PE&RC), Wageningen University: € 200,000

Scientific Conferences

Invited talk:

- 2018 Scientific seminar (INECOL, Xalapa, Mexico). Oral presentation: "Belowground Uptake Strategies: The Role of Root Functional Traits in Tree Performance"
- 2017 39th New Phytologist Symposium: Trait Covariation: structural and functional relationships in plant ecology (Exeter, UK). Oral presentation: "Scaling up fine-root traits. From correlation to integration".

Other:

- 2019 Annual meeting, British Ecological Society. Oral presentation: 'Intraspecific root trait responses to elevation: When roots are stuck between a rock and a hard place'.

- 2016 EcoSummit 2016, Ecological Sustainability: Engineering Change (Montpellier, France). Oral presentation: 'Tree roots: plastic in architectural and biotic traits, but not in morphology'.
- 2015 Rhizosphere4 conference (Maastricht, the Netherlands). Poster presentation: 'Tree root plasticity and mycorrhizal abundance on contrasting forest soils'.
- 2015 Wageningen Ph.D. Symposium (Wageningen, the Netherlands). Oral presentation: 'Tree root plasticity'.
- 2012 TRACE – Tree Rings in Archaeology, Climatology and Ecology (Potsdam and Eberswalde, Germany). Poster presentation: 'What determines growth under optimal site conditions?'. (*Best poster prize*)

Other Research Activities

- 2019 Organizing committee member International Summer School: "Functional Traits of Organisms". May 2019, Porquerolles, France
- 2019 Organizing committee member and participant, 25th New Phytologist Workshop: "Root traits as predictors of plant and soil functions: aggregating current knowledge to build better foundations for root ecological science", Montpellier, France
- 2018 Video co-director: "Root Research in the French Alps".
<https://vimeo.com/315257143/9cfbe75aef>.
In this video, I explain the aims of our ECOPICS project to a general, non-scientific audience, illustrated by footage from our field work campaign in France, where we sample leaves and roots to study their covariation along an altitudinal gradient.
- 2017 Committee member Postdoc Advisory Council, University of Nebraska – Lincoln, NE, USA
- 2013 – 2016 Organizer Ph.D. discussion group: "Ecological Theory and Application", Wageningen University, the Netherlands
- 2015 Session convener Wageningen Ph.D. Symposium: "Connecting Ideas, Combining Forces", Wageningen University, the Netherlands
- 2014 Initiator, organizer and Chair international symposium: "Vegetation – Soil Interactions: from Rhizosphere to Ecosystem", Wageningen University
- 2014 Lab visit to dr. Simon Egli, Mycorrhiza group, Swiss Federal Research Institute WSL, Switzerland (1 month)
Aim: identify ectomycorrhizal exploration types on roots
- 2013 Lab visit to prof. dr. Håkan Wallander, Microbial Ecology group, Lund University, Sweden (2 weeks)
Aim: analyse ergosterol contents of mycorrhizal mycelium in-growth bags
- Journal Reviewer: Biotropica, Frontiers in Plant Science, Global Change Biology, Journal of Ecology, Nature, Nature Communications, New Phytologist

Teaching Experience

- 2018 Supervisor of MSc and BSc students at CEFE-CNRS, Montpellier, France

2017 Supervisor of 4 undergraduate students at University of Nebraska-Lincoln, USA
2012 – 2015 Teaching assistant in several BSc courses, supervisor of 2 MSc students at Wageningen University, the Netherlands

Courses & Workshops

2017 Photosynthesis Training Course, LI-COR; Lincoln, NE, USA
2015 Masterclass: Climate Models revisited: The Biogeochemical Consequences of Mycorrhizal Dynamics; Amsterdam, The Netherlands
2014 Courses: Linear Models, Mixed models; Wageningen, The Netherlands
2012 Course: Root Ecology: Drivers of foraging and interactions in a spatial context; Wageningen, The Netherlands

Language Skills

Dutch: native
English: very good
French: conversational
German: conversational